

Application No. 09/891,222

REMARKS

Claims 1-13 are pending. By this Amendment, claims 1 and 8-12 are amended. No new matter is added. The attached Appendix includes a marked-up copy of each rewritten claim (37 C.F.R. §1.121(c)(1)(ii)).

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration since the amendments amplify issues previously discussed throughout prosecution; and (c) place the application in better form for appeal, should an appeal be necessary. Entry of the amendments is thus respectfully requested.

Applicants appreciate the courtesies extended to Applicants' representative during the personal interview conducted on April 9, 2003. Applicants' separate record of the substance of the interview is incorporated into the following remarks.

Applicants again respectfully request communications from the Patent Office be forwarded to Oliff & Berridge, PLC, in accordance with the submission of Power of Attorney by assignee filed on January 30, 2002.

A request for clarification of the status of the drawings, and request of the withdrawal of the requirement of formal drawings was made in the Amendment filed on October 31, 2002. Applicants respectfully request acknowledgement and response to the request.

Claims 1-8 are rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 5,493,202 to Iwatani et al. (Iwatani) in view of U.S. Patent 4,082,988 to Reime et al. (Reime). The rejection is respectfully traversed.

As discussed during the personal interview, neither Iwatani or Reime, whether considered alone or in combination, disclose or suggest each and every feature of the rejected claims. For example, neither Iwatani or Reime disclose or suggest a voltage regulator of a vehicle AC generator ... comprising first means having an input terminal and a detection line

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connecting the input terminal and said armature coil ... second means for supplying field current to field coil when the self-excited voltage is detected by the first means ... a bypass circuit having a variable resistance connected between the input terminal and a ground, for bypassing leak current flowing in the armature to the ground and third means for decreasing the variable resistance of the bypass circuit when the self-excited voltage is not detected and increasing the variable resistance of the bypass circuit when the self-excited voltage is detected, as recited in claim 1.

As discussed and agreed during the personal interview, the claim amendments distinguish over the references of record. Thus, Applicants respectfully request the rejection of claims 1-8 under 35 U.S.C. §103(a) be withdrawn.

Claims 9-13 are rejected under 35 U.S.C. §103(a) as unpatentable over Iwatani in view of Reime, further in view of U.S. Patent No. 5,550,457 to Kusase et al. (Kusase). The rejection is respectfully traversed.

As discussed during the personal interview, none of the applied references, whether considered alone or in combination, disclose or suggest each and every feature recited in the rejected claims. For example, none of the applied references whether considered alone or in combination disclose or suggest a power-drive circuit including a pulse conversion circuit for converting the self-excited voltage into a binary pulse signal, the power-drive circuit driving the power circuit for a predetermined period starting from an edge of the binary pulse signal, where the pulse conversion circuit comprises a comparator connected to one of the phase-windings and a flip flop circuit connected to the comparator, as recited in claim 9.

The Office Action admits that neither Iwatani or Reime disclose the power-drive circuit. To overcome the admitted deficiency, the Office Action combines Kusase and alleges that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the alleged pulse conversion circuit disclosed by Kusase on the voltage regulator disclosed by Iwatani.

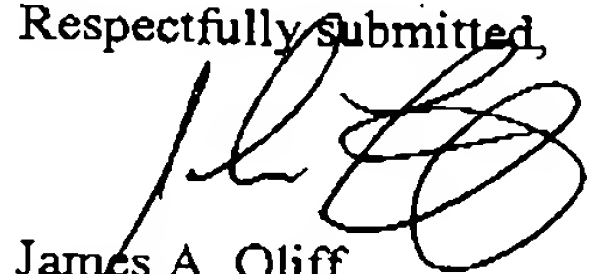
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However, as discussed and agreed during the personal interview, the claim amendments distinguish over the applied references of record. Accordingly, Applicants respectfully request the rejection of claims 9-13 under 35 U.S.C. §103(a) be withdrawn.

In view of the foregoing, reconsideration of the application is requested. It is submitted that the claims as presented herein patentably distinguish over the applied references and fully meet the requirements of 35 U.S.C. §112. Accordingly, allowance of claims 1-13 is respectfully solicited.

Should the Examiner believe anything further is desirable in order to place the application in better condition for allowance, he is requested to contact the undersigned at the telephone number listed below.

Respectfully Submitted,


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JAO:JWF/ldg

Attachments:
Appendix
Petition for Extension of Time

Date: April 11, 2003

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APPENDIX

Changes to Claims:

The following is a marked-up version of the amended claims:

1. (Twice Amended) A voltage regulator of a vehicle AC generator including a field circuit having a field coil and a plurality of magnetic poles and an output circuit having an armature coil, said voltage regulator comprising:
 - first means, ~~connected to~~ having an input terminal and a detection line connecting said input terminal and said armature coil, for detecting a self-excited voltage that is induced in said armature coil by a residual magnetic flux of said rotor;
 - second means for supplying field current to said field coil when said self-excited voltage is detected by said first means;
 - a bypass circuit having a variable resistance, connected between said ~~armature coil~~ input terminal and a ground, for bypassing leak current flowing in said armature to the ground; and
 - third means for decreasing said variable resistance of said bypass circuit when ~~said second means does not supply field current~~ self-excited voltage is not detected and increasing said variable resistance of said bypass circuit when ~~said second means supplies field current to said field coil~~ self-excited voltage is detected.
8. (Twice Amended) A voltage regulator of a vehicle AC generator including a field circuit having a field coil and a plurality of magnetic poles and an output circuit having an armature coil, said voltage regulator comprising:
 - a control circuit for supplying field current to said field coil;
 - a power circuit for supplying electric power to said control circuit to operate the same;

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first means, including an input terminal and a detection line connecting said input terminal to said armature coil, for detecting a self-excited voltage generated in said armature coil;

a power drive circuit for controlling said power circuit according to the self-excited voltage induced in said armature coil, said power drive circuit including a pulse conversion circuit for converting said self-excited voltage into a binary pulse signal;

a bypass circuit having a variable resistance, connected between said ~~armature coil~~ input terminal and a ground, for bypassing leak current flowing in said armature coil to the ground; and

second means for decreasing said variable resistance of said bypass circuit when said ~~power circuit does not supply electric power to said control circuit~~ self-excited voltage is not detected and increasing said variable resistance of said bypass circuit when said ~~self-excited voltage is detected~~ power circuit supplies electric power to said control circuit.

9. (Twice Amended) A voltage regulator of a vehicle AC generator for charging a battery, said AC generator including a field circuit having a field coil and a plurality of magnetic poles, an output circuit having a plurality of phase-windings and a rectifier unit for providing DC output power, said voltage regulator comprising:

means, ~~connected~~ including an input terminal and a detection line connecting said input terminal to a portion of said phase windings, for detecting a self-excited voltage that is induced in said phase-windings by a residual magnetic field;

a switching circuit for controlling field current to be supplied to said field coil;

a switch control circuit for controlling said switching circuit;

a power circuit connected to said switch control circuit; and

a power-drive circuit including a pulse conversion circuit for converting said self-excited voltage into a binary pulse signal, said power-drive circuit driving said power

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circuit for a predetermined period starting from an edge of said binary pulse signal, wherein said pulse conversion circuit comprises a comparator connected to one of said phase-windings and a flip flop circuit connected to said comparator.

10. (Twice Amended) The voltage regulator as claimed in claim 9, wherein said pulse conversion circuit forms said binary pulse signal having a plurality of times as many frequency as a frequency of an output voltage.

11. (Twice Amended) The voltage regulator as claimed in claim 9, wherein said power-drive circuit forms said binary pulse signal having two times as many frequencies as a frequency of an output voltage from a pair of said phase-windings whose phases are 90° different from each other.

12. (Amended) The voltage regulator as claimed in claim 9, wherein said power-circuit-drive circuit drives said power circuit when said rectifier unit provides an output voltage that is higher than a predetermined voltage.